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Electromagnetic Solitons in Quantum Vacuum S.V. BULANOV, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic, Nat. Inst. Quantum Rad. Science Tech., Kansai Photon Science, Kizugawa, Japan, P.V. SASOROV, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic, Keldysh Institute of Applied Mathematics, Moscow, Russia, F. PEGORARO, Department of Physics, University of Pisa and National Research Council, National Institute of Optics, Pisa, Italy, H. KADLECOVA, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic, S.S. BULANOV, Lawrence Berkeley National Laboratory, Berkeley,CA, USA, T.ZH. ESIRKEPOV, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic, Nat. Inst. Quantum Rad. Science Tech., Kansai Photon Science, Kizugawa, Japan, N.N. ROSANOV, Vavilov State Optical Institute, University ITMO, Ioffe Physical Technical Institute Saint-Petersburg, Russia, G. KORN, Inst. Physics of the ASCR, ELI Beamlines, Prague, Czech Republic — In the limit of extremely intense electromagnetic fields the Maxwell equations are modified due to photon-photon scattering that makes the vacuum refraction index depend on the field amplitude. In the presence of electromagnetic waves with small but finite wavenumbers the vacuum behaves as a dispersive medium. Here we present an analytical description (Phys. Rev. D 101, 016016 (2020)) of relativistic electromagnetic solitons that can be formed in a configuration consisting of two counter-crossing electromagnetic waves propagating in the QED vacuum. These extreme high intensity waves in the QED vacuum are described by partial diffrential equations that belong to the family of the canonical equations in the theory of nonlinear waves.

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